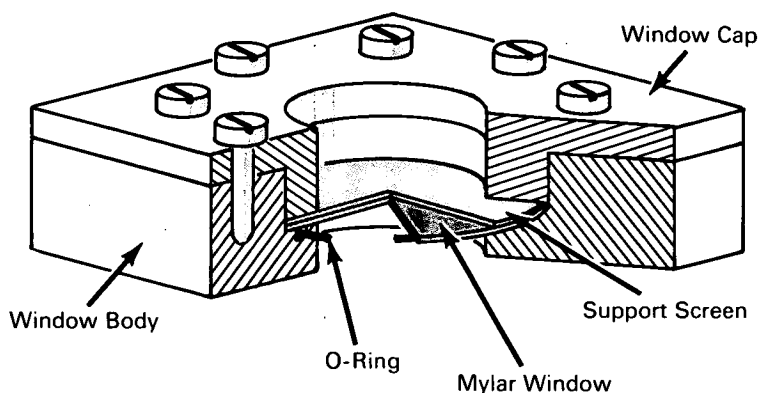


NASA TECH BRIEF



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Aluminized Thin-Window Proportional-Counter Tube Is Stronger, More Responsive in Long Wavelength Region



The problem:

To devise a thin-window proportional counter tube for long-term use in space, or other demanding environments, which permits the efficient detection of long wavelength X-rays out in the 12-15 Å region. The thin window contains an ionizing gas for counter operation in the vacuum of outer space while simultaneously realizing useful sensitivity to long wavelength X-rays. Prior art used a thin window of mica which was not sufficiently rugged and its response in the long wavelength region was impaired.

The solution:

A thin window of 0.25-mil Mylar with a very thin aluminum coating on one side.

How it's done:

A piece of 0.25-mil Mylar is vacuum coated with a thickness of aluminum. Absorption tests are per-

formed to make certain that the Mylar is leak free and still gives reasonable transmission for Na K α X-rays. A window support screen of etched nickel, 0.001-inch thick and 40 wires per inch, is cemented to the compression surface of the window cap with a small amount of commercial potting compound. A thin film of vacuum grease is applied to the window cap over which is placed the aluminized Mylar with the aluminum surface toward the inside of the tube. The O-ring is lightly greased before it is placed in its groove. With the aluminized Mylar held in place by the vacuum grease, the window cap is tightened against the window body.

Notes:

1. Possible applications include oceanography, some types of scientific laboratory work, and geologic exploration.

(continued overleaf)

2. Additional construction and test details are contained in Technical Memorandum No. 33-221, "A Ruggedized Thin Window Proportional Counter Tube", by H. W. Schnopper and R. A. Shields, Jet Propulsion Laboratory, September 15, 1965, which is available from:

Technology Utilization Officer
Jet Propulsion Laboratory
4800 Oak Grove Drive
Pasadena, California 91103
Reference: B67-10015

Patent status:

Inquiries about obtaining rights for the commercial use of this invention may be made to NASA, Code GP, Washington, D.C. 20546.

Source: H. W. Schnopper, Cornell University
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Jet Propulsion Laboratory
(JPL-689)